Claims

[c1] 1. A computer structure for use in the storage of blocks of data comprising:
a network attached storage device comprising:
a storage device network interface capable of transmitting/receiving communications to/from a network infrastructure according to a packet protocol;
a block storage device interface capable of transmitting/receiving communications to/from a block data storage device;
a storage device operating system with a block storage device processor that is capable of:
receiving, from said storage device network interface, a network command of a set of network commands that is interface independent relative to block data storage devices;
generating, to carry out said network command, one or more device specific commands for a block data storage device;
transmitting each of said one or more device specific commands to said block storage device interface;
receiving, from said block storage device interface, a response to said one or more device specific commands that satisfies the network command; and
transmitting, to said storage device network interface, said response to said network command.

[c2] 2. A computer structure, as claimed in claim 1, wherein:
said set of network commands includes a read network command.

[c3] 3. A computer structure, as claimed in claim 1, wherein:
said set of network commands includes a read network command and write network command.

[c4] 4. A computer structure, as claimed in claim 1, wherein:
said set of network commands includes a command relating to a network connection.

[c5] 5. A computer structure, as claimed in claim 4, wherein:

said command relating to a network connection includes a disconnect command for severing a network connection.

[c6] 6. A computer structure, as claim in claim 4, wherein:
said command relating to a network connection includes a ping command for use in determining a network latency.

[c7] 7. A computer structure, as claimed in claim 1, wherein:
said storage device operating system with block storage device processor includes a supervisor that capable of setting up a work queue and a work thread.

[c8] 8. A computer structure, as claimed in claim 1, wherein:
said storage device operating system with block storage device processor includes a request director.

[c9] 9. A computer structure, as claimed in claim 1, wherein:
said storage device operating system with block storage device processor includes a request listener.

[c10] 10. A computer structure, as claimed in claim 1, further comprising:
a memory comprising:
a host operating system with a host block storage device processor for implementing in a host computer relative to which said network attached storage device would be remote, wherein said host operating system with a host block storage device processor is capable of:
receiving, from an application executing on a host computer, a file command;
translating a file command into a network command of a set of network commands that is interface independent relative to block data storage devices;
transmitting said network command to a network interface associated with the host computer for conveyance over a network infrastructure according to a packet protocol;

receiving a response to a previously transmitted network command from the network interface; and

transmitting, if appropriate, the response to the application as at least a partial reply to the file command.

[c11] 11. A computer structure, as claimed in claim 1, further comprising:

a host computer with respect to which said network attached storage device is considered remote, said host computer comprising:

a host network interface for transmitting/receiving communications to/from a network infrastructure according to a packet protocol;

a host operating system with a host block storage device processor that is capable of:

receiving, from an application executing on a host computer, a file command;

translating a file command into a network command of a set of network commands that is interface independent relative to block data storage devices;

transmitting said network command to said host network interface for conveyance over a network infrastructure according to a packet protocol;

receiving a response to a previously transmitted network command from said host network interface; and

transmitting, if appropriate, said response to the application as at least a partial reply to the file command.

[c12] 12. A network structure, as claimed in claim 1 or 11, further comprising:

a network infrastructure operatively connected to said storage device network interface and said host network interface, wherein said network infrastructure is capable of operating according to a packet protocol.

[c13] 13. A computer structure comprising:

a network attached storage device comprising:

a storage device network interface capable of transmitting/receiving communications to/from a network infrastructure according to a packet

protocol;

a block storage device interface capable of transmitting/receiving communications to/from a block data storage device;

a storage device operating system with a block storage device processor that is capable of:

receiving, from said storage device network interface, a network command of a set of network commands that is interface independent relative to block data storage devices;

generating, to carry out said network command, one or more device specific commands for a block data storage device;

transmitting each of said one or more device specific commands to said block storage device interface;

receiving, from said block storage device interface, a response to said one or more device specific commands that satisfies the network command; and

transmitting, to said storage device network interface, said response to said network command;

a host computer with respect to which said network attached storage device is considered remote, said host computer comprising:

a host network interface for transmitting/receiving communications to/from a network infrastructure according to a packet protocol;

a host operating system with a host block storage device processor that is capable of:

receiving, from an application executing on a host computer, a file command;

translating a file command into a network command of a set of network commands that is interface independent relative to block data storage devices;

transmitting said network command to said host network interface for conveyance over a network infrastructure according to a packet protocol;

receiving a response to a previously transmitted network command from said host network interface; and

transmitting, if appropriate, said response to the application as at least a

partial reply to the file command.

[c14] 14. A network structure, as claimed in claim 13, further comprising:
a network infrastructure operatively connected to said storage device network interface and said host network interface, wherein said network infrastructure is capable of operating according to a packet protocol.

[c15] 15. A computer structure comprising:
a host computer that is remotely located relative to a network attached storage device and comprising:
a host network interface for transmitting/receiving communications to/from a network infrastructure according to a packet protocol;
a host operating system with a host block storage device processor that is capable of:
receiving, from an application executing on a host computer, a file command;
translating a file command into a network command of a set of network commands that is interface independent relative to block data storage devices;
transmitting said network command to said host network interface for conveyance over a network infrastructure according to a packet protocol;
receiving a response to a previously transmitted network command from said host network interface; and
transmitting, if appropriate, said response to the application as at least a partial reply to the file command.

[c16]

16. A computer structure, as claimed in claim 15, further comprising:
a network attached storage device comprising:
a storage device network interface capable of transmitting/receiving communications to/from a network infrastructure according to a packet protocol;
a block storage device interface capable of transmitting/receiving communications to/from a block data storage device;

a storage device operating system with a block storage device processor that is capable of:

receiving, from said storage device network interface, a network command of a set of network commands that is interface independent relative to block data storage devices;

generating, to carry out said network command, one or more device specific commands for a block data storage device;

transmitting each of said one or more device specific commands to said block storage device interface;

receiving, from said block storage device interface, a response to said one or more device specific commands that satisfies the network command; and

transmitting, to said storage device network interface, said response to said network command.

[c17] 17. A network structure, as claimed in claim 15 or 16, further comprising:

a network infrastructure operatively connected to said storage device network interface and said host network interface, wherein said network infrastructure is capable of operating according to a packet protocol.

[c18] 18. A method for communicating between a host computer and a network attached storage device with a block data storage device that is remote relative to the host computer comprising:

providing a network infrastructure that extends between but not necessarily to the host computer and the network attached storage device that is capable of transporting communications according to a packet protocol; and

transporting between the host computer and the network attached storage device, with respect to a complete command set for the block data storage device in the network attached storage device, only commands that are within a subset of the complete command set for the block data storage device.

[c19] 19. A method, as claimed in claim 18, further comprising:

transporting between the host computer and the network attached storage

device, with respect to a complete command set for the block data storage device in the network attached storage device, only responses to commands that are within a subset of the complete command set for the block data storage device.

[c20] 20. A method, as claimed in claim 18, wherein:
said subset includes a read command and a write command.